

Application No. 09/674,167
Amendment under 37 CFR 1.111
Reply to Office Action dated March 19, 2004
June 21, 2004

IN THE CLAIMS

Please substitute the following claims for the pending claims with the same numbers, respectively:

Claims 1-27 (Cancelled) :

Claim 28 (Currently amended): A chelate-forming filter comprising at least one of a natural fiber and a regenerated fiber, said fiber containing at least one chelate-forming functional group, said chelate-forming functional group being selected from:

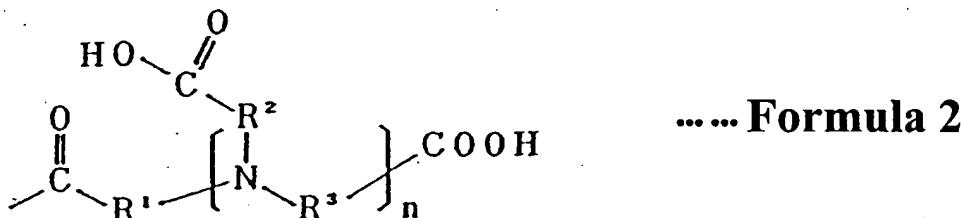
a group represented by formula 1 and having an amino group and at least two hydroxyl groups combined with carbon:



wherein G represents a residue of a chain sugar alcohol or a residue of a polyhydric alcohol, and R represents a hydrogen atom, a lower alkyl group or -G; and

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an acyl group represented by formula 2:



wherein each of R¹, R² and R³ represents a lower alkylene group, and n denotes an integer of 1 to 4.

Claim 29 (Currently amended): A chelate-forming filter according to claim 28, wherein G is a residue of a chain sugar alcohol lacking an amino group selected from the group consisting of D-glucamine, D-galactamine, D-mannosamine, D-arabitylamine, N-methyl-D-glucamine, N-ethyl-D-glucamine, N-methyl-D-galactamine, N-ethyl-D-galactamine, N-methyl-D-mannosamine and ~~N-ethyl-D-mannosamine~~ N-ethyl-D-arabitylamine and R is a hydrogen atom or a lower alkyl group, in the formula 1.

Claim 30 (Previously added): A chelate-forming filter according to claim 28, wherein G is a dihydroxypropyl group, and R is a hydrogen or a lower alkyl group, in the formula 1.

Claim 31 (Previously added): A chelate-forming filter

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according to claim 28, wherein said acyl group represented by the formula 2 is derived from at least one compound selected from the group consisting of nitrilotriacetic anhydride, ethylenediaminetetraacetic dianhydride, and diethylenetriaminepentaacetic dianhydride.

Claim 32 (Previously added): A chelate-forming filter according to claim 28, wherein said chelate-forming fiber has a capability of capturing, as a chelate, a metalloid element or a compound thereof.

Claim 33 (Previously added): A chelate-forming filter according to claim 32, wherein said metalloid element or a compound thereof is boron or a boron compound.

Claim 34 (Previously added): A chelate-forming filter according to claim 28, wherein said chelate-forming fiber has a capability of capturing, as a chelate, a heavy metal element or a compound thereof.

Claim 35 (Previously added): A chelate-forming filter according to claim 28, wherein an introduced amount of the

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chelate-forming functional group calculated by a following equation is greater than or equal to 10% by weight of the fiber,

$$\frac{\text{weight of fiber after reaction} - \text{weight of fiber before reaction}}{\text{weight of fiber before reaction}} \times 100 = \frac{\text{amount introduced}}{\text{weight percent.}}$$

Claim 36 (Currently amended): A process for the purification of a liquid, comprising the steps of:

providing a device having a chelate-forming filter, the chelate-forming filter comprising at least one of a natural fiber and a regenerated fiber, said fiber containing at least one chelate-forming functional group, the chelate-forming functional group being selected from:

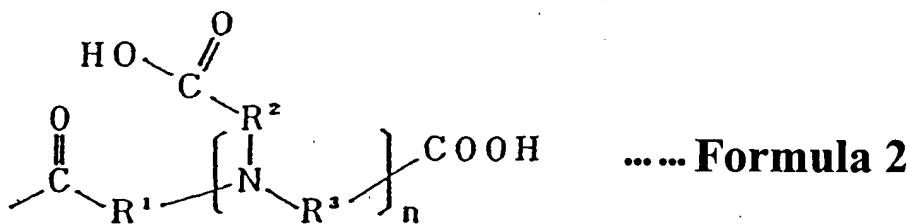
a group represented by formula 1 and having an amino group and at least two hydroxyl groups combined with carbon:



wherein G represents a residue of a chain sugar alcohol or a residue of a polyhydric alcohol, and R represents a hydrogen atom, a lower alkyl group or -G; and

an acyl group represented by formula 2:

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..... Formula 2

wherein each of R¹, R² and R³ represents a lower alkylene group, and n denotes an integer of 1 to 4; and

passing the liquid through the chelate-forming filter to concurrently remove ionic substances and insoluble impurities from the liquid.

Claim 37 (Previously added): A process for the purification of a liquid according to claim 36, wherein said step of passing the liquid through the chelate-forming filter includes passing an aqueous liquid or an oily liquid through the chelate-forming filter.

Claim 38 (Currently amended): A process for producing a chelate-forming filter, comprising the steps of:

providing at least one of a natural fiber and/or and a regenerated fiber into a filter, said fiber having a functional group;

reacting the functional group with:

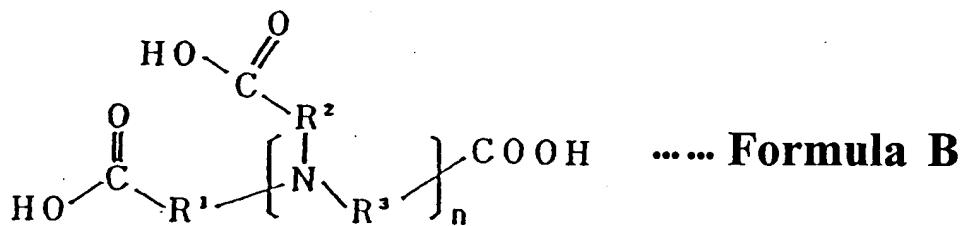
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an amine compound represented by formula A and having an amino group and at least two hydroxyl groups combined with carbon:



wherein G represents a residue of a chain sugar alcohol or a residue of a polyhydric alcohol, and R represents a hydrogen atom, a lower alkyl group or -G; and/or

an acid anhydride of a polycarboxylic acid represented by formula B:



wherein each of R¹, R², and R³ represents a lower alkylene group, and n denotes an integer of 1 to 4,

to thereby introduce a chelate-forming functional group into the fiber.

Claim 39 (Previously added): A process for producing a chelate-forming filter according to claim 38, wherein said step

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of reacting the functional group fiber includes using a cross-linking agent.

Claim 40 (Previously added): A process for producing a chelate-forming filter according to claim 38, wherein the amine compound represented by the formula A is at least one compound selected from the group consisting of D-glucamine, N-methyl-D-glucamine, and dihydroxypropylamine.

Claim 41 (Previously added): A process for producing a chelate-forming filter according to claim 38, wherein the acid anhydride of polycarboxylic acid represented by the formula B is at least one compound selected from the group consisting of nitrilotriacetic anhydride, ethylenediaminetetraacetic dianhydride, and diethylenetriaminepentaacetic dianhydride.

Claims 42 and 43 (Cancelled) :